

REMARKS/ARGUMENT

Claim 34 is allowed.

Claims 4-7, 9 and 30-33, objected to as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, have been so amended. As a result, Claims 4-7, 9 and 30-33 stand allowable.

Claim 8 has been amended to overcome the objection. As a result, Claim 8 stands allowable.

Claims 10, 11, 17, 18, 22, 23, 35 and 36 have been amended better to define the claimed invention and overcome the 35 U.S.C. 112, second paragraph, rejections. As a result, the 35 U.S.C. 112, second paragraph, rejection of Claims 10-14, 17-27 and 35-38 are overcome.

Applicant appreciates Examiner's determination that Claims 10-14 and 35-38 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph. Claims 10-14 and 35-38 have been so amended. Accordingly, Claims 10-14 and 35-38 stand allowable.

In light of the above, Claims 4-14, 30-33 and 35-38 stand allowable.

1) Claims 15-27 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Applicant respectfully traverses this rejection, as set forth below.

Independent Claim 15 requires and positively recites, a method of transmitting a spread spectrum communications signal, comprising the steps of:

applying at least one peak compression pulse to the spread spectrum signal at a first peak sample point, the magnitude of the signal at the first peak sample point exceeding a peak qualifying threshold, to produce a peak-compressed symbol stream;

repeating, at least twice, the applying step on the peak-compressed symbol stream;

amplifying an analog modulated signal corresponding to a peak-compressed symbol stream from the last of the repeated applying steps to produce the signal to be transmitted.

Independent Claim 22 requires and positively recites, a method of transmitting a spread spectrum communications signal, comprising the steps of:

applying at least one peak compression pulse to the spread spectrum signal at a first peak sample point, the magnitude of the signal at the first peak sample point exceeding a peak qualifying threshold, to produce a peak-compressed symbol stream;

repeating, at least once, the applying step on the peak-compressed symbol stream;

amplifying an analog modulated signal corresponding to a peak-compressed symbol stream from the last of the repeated applying steps to produce the signal to be transmitted;

wherein each applying step comprises:

identifying a peak location and a filter value corresponding to an amplitude at a peak location in the spread spectrum signal;

producing a cancellation pulse corresponding to the identified peak location and the corresponding filter value;

delaying the spread spectrum signal to match the peak location;

combining the delayed received signal and the cancellation pulse;

wherein the identifying step comprises:

generating a curve-fitting estimate over a delay interval near a sample point;

determining the peak location within the delay interval from the curve-fitting estimate;

evaluating the amplitude at the determined peak location;

comparing the evaluated amplitude against a peak qualifying threshold; and

producing the filter value responsive to the evaluated amplitude;

comparing a magnitude of each sample point in the received symbol stream with magnitudes of one or more neighboring samples;

pre-qualifying a sample point if its magnitude is greater than that of the one or more neighboring samples;

wherein the identifying step is performed for pre-qualified sample points.

Independent Claim 23 requires and positively recites, a method of **transmitting a spread spectrum communications signal**, comprising the steps of:

applying at least one peak compression pulse to the spread spectrum signal at a first peak sample point, the magnitude of the signal at the first peak sample point exceeding a peak qualifying threshold, **to produce a peak-compressed symbol stream**;

repeating, at least once, the applying step on the peak-compressed symbol stream;

amplifying an analog modulated signal corresponding to a peak-compressed symbol stream from the last of the repeated applying steps to produce the signal to be transmitted;

wherein each applying step comprises:

identifying a peak location and a filter value corresponding to an amplitude at a peak location in the spread spectrum signal;

producing a cancellation pulse corresponding to the identified peak location and the corresponding filter value;

delaying the spread spectrum signal to match the peak location;
combining the delayed received signal and the cancellation pulse;

wherein the identifying step comprises:

generating a curve-fitting estimate over a delay interval near a sample point;

determining the peak location within the delay interval from the curve-fitting estimate;

evaluating the amplitude at the determined peak location;

comparing the evaluated amplitude against a peak qualifying threshold; and

producing the filter value responsive to the evaluated amplitude;

responsive to the comparing step determining that the evaluated amplitude of a first sample point exceeds the peak qualifying threshold, comparing the evaluated amplitudes of peak sample points over a selected number of subsequent sample points;

wherein the producing step is performed for the first sample point responsive to no peak sample points in the selected number of subsequent sample points having a larger evaluated amplitude than that of the first sample point; and

responsive to the comparing step determining that the evaluated amplitude of a second sample point within the selected number of subsequent sample points has a larger evaluated amplitude than that of the first sample point, inhibiting producing of the filter value for the first sample point and then repeating the comparing the evaluated amplitudes of peak sample points over a selected number of subsequent sample points relative to the second sample point.

Examiner makes the following determination in his 35 U.S.C. 101 rejection of Claims 15-27:

The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. In the instant case, the process must (1) be tied to another statutory category (such as a particular apparatus)(OA dated 01/26/2009, page 2, lines 13-17).

Examiner's determination above, however, is simply erroneous. "[w]heather a claim is drawn to patent-eligible subject matter under 35 U.S.C. § 101 is a threshold inquiry, and any claim of any claim of an application failing the requirements of § 101 must be rejected even if it meets all of the other legal requirements of patentability." In re Bilski, 545 F.3d 943, 952 (Fed. Cir. 2008)(en banc). The Federal Circuit stated that the Supreme Court's machine-or-transformation test is the "definite test to determine whether a process claim is

tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself.” *Id.* At 954. As the Federal Circuit phrased the machine-or-transformation test in Bilski:

A claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.

Id. (emphasis in original)(citing Gottschalk v. Benson, 409 U.S. 63, 70 (1972); Diamond v. Diehr, 450 U.S. 175, 192 (1981); Parker v. Flook, 437 U.S. 584, 589 n. 9 (1978); Cochrane v. Deener, 94 U.S. 780, 788 (1876)).

The limitation “**transmitting a spread spectrum communications signal**” in independent Claims 15, 22 & 23 represents an actual physical signal, i.e., a “concrete thing” that can be physically measured. The above step is NOT a “mental process”, “phenomena of nature” or “abstract intellectual concept”. Applicant respectfully submits that the above step can be only performed by a machine or apparatus. Thus, Claims 15, 22 & 23 are “tied” to a machine or apparatus as required by case law (meeting the first step of the Bilski test – (1) be tied to another statutory category (such as a particular apparatus)) .

In addition to the above, the spread spectrum signal or “concrete thing” is then transformed into a different state or thing by the step “**applying at least one peak compression pulse to the spread spectrum signal at a first peak sample point**, the magnitude of the signal at the first peak sample point exceeding a peak qualifying threshold, **to produce a peak-compressed symbol stream**”, which represents a transformation of the “spread spectrum signal” into “**a peak-compressed symbol stream**” - which is a transformation of a concrete thing from one state to a different state or thing, which complies with “or (2) it transforms a particular article into a different state or thing”, as set forth in Bilski.

Thereafter, there is a second transformation wherein the “peak-compressed symbol stream” is transformed into a different state or thing by the step “**amplifying an analog modulated signal corresponding to a peak-compressed symbol stream** from the last of the repeated applying steps **to produce the signal to be transmitted**”, which represents a transformation of the “analog modulated signal” into an “**amplified modulated signal**” - which is a transformation of a concrete thing from one state to a different state or thing, which complies with “or (2) it transforms a particular article into a different state or thing”, as set forth in Bilski. In addition to the above, Claim 22 & 23 contain various addition limitations (as bolded above) that are additional transformative steps. As a result, Claims 15, 22 & 23 do comply with the requirements of 35 U.S.C. § 101. Accordingly, the 35 U.S.C. § 101 rejection of Claims 15, 22 & 23 is improper and must be withdrawn

Claims 16-21, 24-27 depend directly, or indirectly, from allowable Claim 15 and are similarly allowable.

2) Claims 1, 15 and 28 are rejected under 35 U.S.C. 102(a) as being anticipated by Hunton US Patent No. 7,003,017. Applicant respectfully traverses this rejection, as set forth below.

In order that the rejection of Claims 1, 15 and 28 be sustainable, it is fundamental that “each and every element as set forth in the claim be found, either expressly or inherently described, in a single prior art reference.” Verdegall Bros. v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See also, Richardson v. Suzuki Motor Co., 9 USPQ2d 1913, 1920 (Fed. Cir. 1989), where the

court states, "The identical invention must be shown in as complete detail as is contained in the ... claim".

Furthermore, "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Independent Claim 1 requires and positively recites, an integrated circuit for compressing peak sample values in spread spectrum signals, comprising: "**at least three peak detection and cancellation circuits arranged in a sequence, a first of the peak detection and cancellation circuits having an input coupled to receive a spread spectrum symbol stream, a second of the peak detection and cancellation circuits having an input coupled to the output of the first peak detection and cancellation circuit; and a third of the peak detection and cancellation circuits having an input coupled to the output of the second peak detection and cancellation circuit**, each peak detection and cancellation circuit for applying a cancellation pulse to a received symbol stream responsive to detecting a peak amplitude in the received symbol stream exceeding a threshold, and for presenting a compressed symbol stream including the received symbol stream and cancellation pulse at its output".

Independent Claim 15 requires and positively recites, a method of transmitting a spread spectrum communications signal, comprising the steps of: "applying at least one peak compression pulse to the spread spectrum signal at a first peak sample point, the magnitude of the signal at the first peak sample point exceeding a peak qualifying threshold, to produce a peak-compressed symbol stream", "**repeating, at least twice, the applying step on the peak-compressed symbol stream**", "amplifying an analog modulated signal corresponding to a

peak-compressed symbol stream from the last of the repeated applying steps to produce the signal to be transmitted”.

Independent Claim 28 requires and positively recites, a wireless base station for transmitting spread spectrum signals corresponding to a plurality of communications channels, comprising: “at least one coder/decoder for generating a spread spectrum signal over a plurality of channels, the signal being arranged in the form of a digital symbol stream”, “**at least three peak detection and cancellation circuits arranged in a sequence, a first of the peak detection and cancellation circuits having an input coupled to receive a spread spectrum symbol stream, a second of the peak detection and cancellation circuits having an input coupled to the output of the first peak detection and cancellation circuit; and a third of the peak detection and cancellation circuits having an input coupled to the output of the second peak detection and cancellation circuit**, each peak detection and cancellation circuit for applying a cancellation pulse to a received symbol stream responsive to detecting a peak amplitude in the received symbol stream exceeding a threshold, and for presenting a compressed symbol stream including the received symbol stream and cancellation pulse at its output”, “a digital-to-analog converter for converting the compressed symbol stream to an analog signal”, “modulation circuitry for producing a modulated signal, corresponding to the analog signal, at a carrier frequency; and a power amplifier, for amplifying the modulated signal for transmission”.

In contrast, Hunton discloses a method for peak power reduction in spread spectrum communication systems in which its peak reduction unit 122 contains only two reduction process states 140, 142, corresponding to peak reduction at the on-symbol interval, $t=0$, and inter-symbol interval, $t=0.5$, respectively (FIGs. 6 & 7; col. 10, line 65 – col. 11, line 3). There is, however, no teaching that there are

“three or more” reduction process states in Hunton. As such, Hunton fails to teach or suggest, “**at least three peak detection and cancellation circuits arranged in a sequence, a first of the peak detection and cancellation circuits having an input coupled to receive a spread spectrum symbol stream, a second of the peak detection and cancellation circuits having an input coupled to the output of the first peak detection and cancellation circuit; and a third of the peak detection and cancellation circuits having an input coupled to the output of the second peak detection and cancellation circuit**, each peak detection and cancellation circuit for applying a cancellation pulse to a received symbol stream responsive to detecting a peak amplitude in the received symbol stream exceeding a threshold, and for presenting a compressed symbol stream including the received symbol stream and cancellation pulse at its output”, as required by Claims 1 and 28, OR “**repeating, at least twice, the applying step on the peak-compressed symbol stream**”, as required by Claim 15. Accordingly, the 35 U.S.C. 102(e) rejection of Claims 1, 15 and 28 is overcome.

Applicant further notes that FIG. 6 of Hunton corresponds exactly to present “prior art” Figure 1 of the present application. Applicant note in their background that conventional approaches, such as illustrated in “prior art” Figure 1, while simple, may not eliminate all peaks in the transmitted signal, due to the effects of downstream filter 126. In addition, the approach can also introduce distortion into the transmitted signal.

3) Claims 2, 16 and 29 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hunton (US 2002/0006169) in view of Uto et al U.S. Patent No. 6,674,328. Applicant respectfully traverses this rejection, as set forth below.

In proceedings before the Patent and Trademark Office, "the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art". *In re Fritch*, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (citing *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). "The Examiner can satisfy this burden **only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references**", *In re Fritch*, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992)(citing *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988)(citing *In re Lalu*, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1988)).

Similarly, "obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, **absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined ONLY if there is some suggestion or incentive to do so.**" *ACS Hosp. Systems, Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984).

Similarly, although couched in terms of combining teachings found in the prior art, the same inquiry must be carried out in the context of a purported obvious "modification" of the prior art. **The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.** *In re Gordon*, 733 F.2d at 902, 221 USPQ at 1127. Moreover, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed.Cir.1991). See also

Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed.Cir.1985).

Furthermore, "all words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Claim 2 further defines the integrated circuit of claim 1, by further comprising: "an output limiter, coupled to the output of the last of the peak detection and cancellation circuits in the sequence, for reducing residual peak amplitudes in the compressed symbol stream from the last of the peak detection and cancellation circuits in the sequence".

Claim 16 further defines the method of claim 15, by further comprising: "before the amplifying step, output limiting the peak-compressed symbol stream from the last of the repeated applying steps".

Claim 29 further defines the base station of claim 28, further comprising: "an output limiter, coupled to the output of the last of the peak detection and cancellation circuits in the sequence, for reducing residual peak amplitudes in the compressed symbol stream from the last of the peak detection and cancellation circuits in the sequence".

Examiner admits that Hunton does not teach the further limitation of an output limiter, coupled to the output of the last of the peak and cancellation circuits in the sequence for reducing residual peak amplitudes in the compressed symbol stream from the peak detection and cancellation circuits in the sequence (OA, page 7, lines 8-12). Examiner, however, relies upon Uto for this teaching.

Applicant respectfully respond that even if, *arguendo*, Uto taught what is suggested by Examiner, Uto fails to teach the previously identified deficiency of Hunton (see above) as applied to Claims 1, 15 and 28. As such, any combination of Hunton and Uto fails to teach or suggest all of the limitations of Claims 2, 16 and 29. Accordingly, the 35 U.S.C. 103(a) rejection of Claims 2, 16 and 29 is improper and must be withdrawn.

4) Claims 3 & 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hunton (US 7,003,017) in view of Rakib et al. (US 6,426,983).

In proceedings before the Patent and Trademark Office, "the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art". *In re Fritch*, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (citing *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). "The Examiner can satisfy this burden **only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references**", *In re Fritch*, 23 USPQ2d 1780; 1783 (Fed. Cir. 1992)(citing *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988)(citing *In re Lulu*, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1988)).

Similarly, "obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, **absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined ONLY if there is some suggestion or incentive to do so.**" *ACS Hosp. Systems, Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984).

Similarly, although couched in terms of combining teachings found in the prior art, the same inquiry must be carried out in the context of a purported obvious "modification" of the prior art. **The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.** *In re Gordon*, 733 F.2d at 902, 221 USPQ at 1127. Moreover, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed.Cir.1991). See also *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed.Cir.1985).

Furthermore, "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

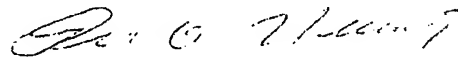
Claim 3 further defines the integrated circuit of claim 1, further comprising: "a digital downsampler, for receiving the spread spectrum symbol stream and forwarding a subset of the symbols in the spread spectrum symbol stream to the input of the first of the peak detection and cancellation circuits in the sequence".

Claim 17 further defines the method of claim 15, further comprising: "downsampling the spread spectrum signal before the step of applying at least one peak compression pulse to the spread spectrum signal at the first peak sample point".

Examiner admits that Hunton does not teach the further limitation of a digital down sampler for receiving the spread spectrum symbol stream and forwarding a subset of the symbols in the spread spectrum symbol stream to the input of the first of the peak detection and cancellation circuits (OA, page 7, line 23 – page 8, line 2). Examiner, however, relies upon Rakib et al for this teaching. Applicant respectfully respond that even if, arguendo, Rakib taught what is suggested by Examiner, Rakib fails to teach the previously identified deficiency of Hunton (see above) as applied to Claims 1 and 15. As such, any combination of Hunton and Rakib fails to teach or suggest all of the limitations of Claims 3 and 17. Accordingly, the 35 U.S.C. 103(a) rejection of Claims 3 and 17 is improper and must be withdrawn.

Claim 34 is allowed. Claims 4-14, 30-33 and 35-38 are in allowable form. Claims 1-3, 15-17, 28 and 29 stand allowable over the cited art for the reasons set forth above. Applicant respectfully requests withdrawal of the rejections and objections and allowance of the application at the earliest possible date.

Respectfully submitted,



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